UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,720,014 B1
APPLICATION NO. : 09/580515
DATED : April 13, 2004
INVENTOR(S) : Jay M. Short

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Delete the title page and substitute therefore the attached title page showing the corrected number of claims.

Page 47, beginning at column 83 through column 86, after What is claimed is:, all claims should be replaced with the following:

Column 85, lines 44-49, should read:
18. A method to produce a foodstuff containing a microbial phytase comprising:
a) providing a plant cell, plant part or plant that contains a recombinant expression vector comprising a phytase-encoding nucleic acid having a nucleotide sequence selected from
i) SEQ ID NO:1, and
ii) SEQ ID NO:1, wherein T can also be U;
b) culturing the plant cell, plant part or plant under conditions wherein said nucleic acid is expressed as a polypeptide; and
c) converting said plant cells, plant parts or plants into a composition suitable for foodstuff, wherein the foodstuff contains phytate and the phytase.

Column 86, line 48, insert the following claims:
--41. The method of claim 18, wherein the recombinant expression vector comprising the nucleic acid encoding said phytase is within a host cell.
42. The method of claim 18, wherein said phytase-encoding nucleic acid is operably linked to a polynucleotide encoding a signal peptide.
43. The method of claim 41, wherein the nucleic acid is operably linked to a transcription control sequence operable in said plant cells, plant parts or plants.
44. The method of claim 43, wherein the control sequence comprises a tissue-specific promoter that is specific for the plant cells, plant parts or plants.
45. The method of claim 43, wherein the control sequence comprises a constitutive promoter.

This certificate supersedes the Certificate of Correction issued December 21, 2010.

Signed and Sealed this
Eighth Day of February, 2011

David J. Kappos

David J. Kappos
Director of the United States Patent and Trademark Office

46. The method of claim 18, wherein the phytase catalyzes liberation of inorganic phosphate from the phytate in the foodstuff.
47. The method of claim 46, wherein the liberation occurs after the ingestion of said foodstuff by a recipient organism.
48. The method of claim 46, wherein the liberation of the inorganic phosphate from the phytate in said foodstuff occurs in part prior to and in part after the ingestion of said foodstuff by a recipient organism.
49. The method of claim 46, wherein the liberation of the inorganic phosphate from the phytate in said foodstuff occurs prior to the ingestion of said foodstuff by a recipient organism.
50. The method of claim 18, further comprising purifying the expressed polypeptide.
51. The method of claim 18, wherein the plant comprises seeds containing the phytase encoded by a nucleic acid having the nucleotide sequence as set forth in SEQ ID NO:1 to be used to catalyze phytate-hydrolyzing reactions.
52. The method of claim 18, wherein the foodstuff is for a non-ruminant animal.
53. The method of claim 18, wherein the foodstuff is for a monogastric animal.
54. The method of claim 18, wherein the plant cells, plant part, or plant is of a dicotyledonous species.
55. The method of claim 18, wherein the plant cells, plant part, or plant is of a monocotyledonous species.
56. A method to produce a foodstuff containing a microbial phytase comprising:
a. providing a plant cell, plant part or plant that contains a recombinant expression vector comprising a phytase-encoding nucleic acid having a nucleotide sequence selected from
i. a sequence encoding a polypeptide sequence as set forth in SEQ ID NO:2 and
ii. a sequence encoding the polypeptide sequence as set forth in SEQ ID NO:2, wherein T can also be U;
b. culturing the plant cell, plant part or plant under conditions wherein said nucleic acid is expressed; and
c. converting said plant cells, plant parts or plants into a composition suitable for foodstuff, wherein the foodstuff contains phytate and the phytase.
57. The method of claim 56, wherein the recombinant expression vector comprising the nucleic acid encoding said phytase is within a host cell.
58. The method of claim 56, wherein said phytase-encoding nucleic acid is operably linked to a polynucleotide encoding a signal peptide.
59. The method of claim 57, wherein the nucleic acid is operably linked to a transcription control sequence operable in said plant cells, plant parts or plants.
60. The method of claim 59, wherein the control sequence comprises a tissue-specific promoter that is specific for the plant cells, plant parts or plants.
61. The method of claim 59, wherein the control sequence comprises a constitutive promoter.
62. The method of claim 56, wherein the phytase catalyzes liberation of inorganic phosphate from the phytate in the foodstuff.
63. The method of claim 62, wherein the liberation occurs after the ingestion of said foodstuff by a recipient organism.

64. The method to claim 62, wherein the liberation of the inorganic phosphate from the phytate in said foodstuff occurs in part prior to and in part after the ingestion of said foodstuff by a recipient organism.
65. The method of claim 62, wherein the liberation of the inorganic phosphate from the phytate in said foodstuff occurs prior to the ingestion of said foodstuff by a recipient organism.
66. The method of claim 56, further comprising purifying the expressed polypeptide.
67. The method of claim 56, wherein the plant comprises seeds containing the phytase encoded by a nucleic acid having a sequence as set forth in SEQ ID NO:1 to be used to catalyze phytate-hydrolyzing reactions.
68. The method of claim 56, wherein the foodstuff is for a non-ruminant animal.
69. The method of claim 56, wherein the foodstuff is for a monogastric animal.
70. The method of claim 56, wherein the plant cell, plant part, or plant is of a dicotyledonous species.
71. The method of claim 56, wherein the plant cell, plant part, or plant is of a monocotyledonous species.
72. The method of claim 18, wherein the foodstuff is an animal feed.
73. The method of claim 46, wherein the foodstuff is an animal feed.
74. The method of claim 52, wherein the foodstuff is an animal feed.
75. The method of claim 53, wherein the foodstuff is an animal feed.
76. The method of claim 56, wherein the foodstuff is an animal feed.
77. The method of claim 62, wherein the foodstuff is an animal feed.
78. The method of claim 68, wherein the foodstuff is an animal feed.
79. The method of claim 69, wherein the foodstuff is an animal feed.--

(12) **United States Patent**
Short et al.

(10) **Patent No.: US 6,720,014 B1**
(45) **Date of Patent: *Apr. 13, 2004**

(54) **PHYTASE-CONTAINING FOODSTUFFS AND METHODS OF MAKING AND USING THEM**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **09/580,515**

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Related U.S. Application Data

(60) Continuation-in-part of application No. 09/318,528, filed on May 25, 1999, now Pat. No. 6,183,740, which is a continuation-in-part of application No. 09/291,931, filed on Apr. 13, 1999, now Pat. No. 6,190,897, which is a continuation of application No. 09/259,214, filed on Mar. 1, 1999, now Pat. No. 6,110,719, which is a division of application No. 08/910,798, filed on Aug. 13, 1997, now Pat. No. 5,876,997.

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(52) **U.S. Cl.** **426/52**; 435/196; 435/320.1; 435/69.1; 435/468; 435/410; 435/18; 536/23.2; 800/278; 800/295; 426/53; 426/61; 426/615; 426/635

(58) **Field of Search** 435/18, 69.1, 468, 435/320.1, 410, 196; 536/23.2; 800/278, 295; 426/52, 53, 61, 615, 635

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(57) **ABSTRACT**

A purified recombinant phytase enzyme derived from *Escherichia coli* B. The enzyme has a molecular light of about 47.1 kilodaltons and has phytase activity. The enzyme can be produced from native or recombinant host cells and can be used to aid in the digestion of phytate where desired. In particular, the phytase of the present invention can be used in foodstuffs to improve the feeding value of phytate rich ingredients.

79 Claims, 3 Drawing Sheets